

SOUTH BAY ATARI COMPUTER ENTHUSIASTS NEWSLETTER - JUNE 1982

COLOR PRINT REVIEW

Rick Nichols

Since I recently purchased the Epson MX-80 with the GRAFTRAX-80 ROMS, I was anxious to experiment with the printer's abilities. I purchased the COLOR PRINT program by Courtney Goodwin distributed by Datasoft Inc. COLOR PRINT will print high resolution graphics mode 7 or 8 pictures in black and white or full color. COLOR PRINT is directly compatible with MICRO PAINTER and GRAPHIC MASTER, both distributed by Datasoft. The program can also be used with other graphics programs, such as Atari's GRAPH-IT.

The program requires at least 40K RAM, BASIC Language Cartridge, Disk Drive, Atari 850 Interface Module, Epson MX-80 (with GRAFTRAX), a color monitor, and 8 1/2" x 11" fan-fold paper. All other materials are supplied with the diskette.

The diskette is autoboot and is copy protected. Upon loading the program, the first menu appears. You are given a choice of print directions, VERTICAL or HORIZONTAL. After selecting print directions the corresponding program is loaded from diskette and another menu is displayed. You then enter the first letter of the option desired. They are as follows:

(S)ave - This feature is used to save the contents of the graphics screen to diskette.

(L)oad - This will load a previously saved picture from diskette.

(P)rint - Self-explanatory

(D)irectory - Lets you step through the directory for specific files or to check on remaining sectors.

(Q)uit - Lets you exit the program.

Now to the fun part, printing pictures. My first printouts were done in black and white because, quite truthfully, I thought printing in color would be a pain in the laurels. There are four graphic pictures provided on disk. A butterfly, rosebud (mode 7), peacock, and squares (mode 8). A mode 7 display will use 31 sectors, while mode 8 will use 62 sectors on the diskette. Printing the black and white pictures are a snap. Just follow the menu prompts. It's hard to believe a dot-matrix printer can print high resolution pictures. What will they think of next? Well, guess what? Epson has just announced GRAFTRAX-PLUS ROMS (it figures, I just bought the GRAFTRAX-80 ROMS) and COLOR PRINT is compatible with the new ROMS. I don't know what more they have to offer except they replace the old ROMS and allow printing graphics from two to three times faster.

O.K. already, what about color prints? Well this is a somewhat more difficult procedure (my description may even make it sound really tedious) but, after finally forcing myself to try it out, I found it ain't so tough. After you select a print option, a series of menus will offer you a choice of two print sizes, two print densities (horizontal only), and either color or black and white printouts. In the horizontal mode a large size picture is about 6 1/2" x 9" with a medium size of 3 1/4" x 4 1/2". When printing vertically, the large size is 5 1/4" x 6" and medium is approximately 2 1/2" x 3 5/8". You then select the print density, Normal (60 dots/inch) or Emphasized (120 dots/inch). The printer will make two or three passes to complete a line in the Emphasized mode, therefore, that mode takes considerably longer to print a picture. When you've made the selection, you have the chance to INVERT the colors on the display. Inverting may be called for in a black and white print because the white areas on the screen are printed as black areas on the paper. The next menu asks for (1) Full Screen Print, or, (2) Define Print Window. Full Screen is self-explanatory. With Define Print Window, you can define which portion of the picture you wish printed. Next, you are prompted for left

margin width. A number between 0 and XX will be displayed and the choice of a number halfway between 0 and XX will center your printout.

To make the color print, you're required to make a "carbon sandwich". This is accomplished by tearing off a two piece segment of fanfold paper so that the two pages are connected at the perforation. With the two pieces folded at the perforation, insert a sheet of colored carbon between them. The perforated end should be considered the "top". In order for the printer to make color pictures, it requires multiple passes (in this case 4). But, alas! How does the printer print in the proper areas each time? This is done by placing a piece of tape on the tractor feed gates and drawing a horizontal line as a reference for the "top" starting point. When you close the gates, you have a point (the horizontal line) to line the top of the page with. Sound hard? It really isn't all that bad.

Color printing will switch to the four default colors:

Mode 8 - #3- White, #2-Green or Blue, #1-Purple or Red, and #0-Black (or background).

Mode 7 - #3-Blue, #2-Yellow, #1-orange, and #0-Black (or background).

You can also press the select key and step through the colors to change the order of printing. The text window, at the bottom of the screen, will indicate which color number will be printed next. These colors are a visual aid to show you which area will be printed next. It is not at all necessary to use the default colors for the carbon inserts. You can experiment using different colored carbon for different screen color numbers. **TRY IT!!**

What kind of review is this? No criticism!! Well, yes, I do have one, albeit relatively minor. Just what happens when you are out of the colored carbons included in the program (there are five sheets each of red, blue, green, yellow, orange, and black)? There is one sentence in the instruction manual - "Colored carbon replacements are available from Datasoft". That's nice. How about it, Datasoft, why not enclose an order form with the diskette stating prices and an alternate source, like a stationery store or something. By the way, I

did try a couple of stationery stores, no colored carbons. So Datasoft may be your best bet.

I said at the outset that this program can be used with "other" graphics programs. To paraphrase the instruction manual, "if you have the necessary programming skills", you can probably find a way to make it work. Datasoft, not all of us are that skilled, yet, but we're trying. It's good programming practice, however.

If the graphics program uses a text window at the bottom of the screen, there is HOPE! I have successfully used the following procedure with the 3-D package on Atari's GRAPH-IT. However, it did not work with the PIE or BAR GRAPH portions (program modification needed). By pressing the Break key, I was able to freeze the screen at that point. Then type in RUN "D:HARDCOPY" (this program is provided on the diskette and is programmed to preserve the graphic screen), the program prompts appear and away you go! I might add that the Atari 3-D program can provide some spectacular printouts.

I would rather have seen a Binary Load option, (L) on the DOS Menu, which would load a program into RAM for use with other graphic packages. You could then go back to BASIC, (B) option in DOS, run your graphics program and screen dump by using simple keyboard commands. No fuss, no muss. Overall, this really is an excellent program, and much more experimentation is in order.

A final note, this program can also be used with the NEC 8023-A printer, instructions for this modification are provided with the diskette. This program is available from HW Electronics or DATASOFT for \$34.95.

MICRO-PAINTER REVIEW

Rick Nichols

MICRO-PAINTER is written by Harry Tarnoff and distributed by Datasoft, Inc. . It requires 48K RAM, Disk Drive, and you use keyboard commands and/or the joystick. The diskette will auto-load and is copy protected, however, the picture files can be copied.

I'm going to be as brief as possible with this review. Suffice it to say, I am not an artist (not even remotely close). My comments will primarily explain the program's operation. This program has lots of room for experimentation. If you are artistically inclined, it could be a panacea.

The teaching method of the instruction manual is of the "use it" variety and is very effective. You begin with the "FIVE MINUTE DEMO" after inserting the disk. Instructions on how to use the keyboard and joystick to "paint" a picture follow. Now you press the Start key and the "OPTION MENU" is displayed. The options are:

C=Catalog (displays the contents of the disk files)
L=Load Picture (will load picture files (9 unpainted pictures are provided on the diskette))
S=Save Picture (save a picture to file)
+=Lock File
-=Unlock File
D=Delete File
R=Rename File
Return to Exit

Select the "L" option, type in "MICROMAN" and a partially painted Microman will be displayed on the screen. Your job is to practice painting the picture. There is a small cross on the screen which can be moved to unpainted areas via the joystick or arrow keys. There is a menu at the top of the screen which displays the fill patterns which are solid, horizontal, and vertical stripes and checkered. The four colors available for painting are also displayed. You select these by either the keyboard or joystick.

MICRO-PAINTER will not let a color fill beyond a border (usually black) or into a different colored area. Now select a color, put the cursor in an unpainted area and press the joystick button. PRESTO! The area fills with that color. That's basically it.

One nifty MICRO-PAINTER feature is allowing you to enter into "MICROSCOPE WORLD". By hitting the Space Bar, you can leave a normal view and enter a magnified view of the picture. You can move across the entire screen in this mode, but movement is VERY SLOW. Basically, this is a tool for making additions or corrections to a picture. Hitting the Space Bar again takes

you back to the normal view. Toggling back and forth is therefore possible..

MICRO-PAINTER can be used to draw original pictures. When using the joystick, hold the button down while moving the handle. This draws a line in any direction you move the stick. There is also the "RUBBER BAND LINE-DRAW" mode, so named because of the rubber band-like appearance of the line before it's drawn. Move the cursor to the desired spot, press the button and move the handle on the joystick in any direction. The line will follow the cursor around the screen. Thus, you can preview a line before it's drawn. When the desired line is drawn, release the button.

The colors may be changed at any time a picture is on the screen. Joystick or keyboard commands can be used to go through all sixteen colors and eight brightness levels. Any one or all of the four primary colors can be changed. Endless color combinations are possible by using the previously mentioned fill patterns. The checkerboard design will create light and dark colors. Other colors are created by the alternating line of colors in vertical or horizontal stripes.

The possibilities with this program are endless. My recommendation is to check it out for yourself. It's a worthwhile experience.

This program is available from HW Electronics or Datsoft for \$34.95.

USING THE ATARI WORD PROCESSOR WITH THE EPSON MX-80 PRINTER

James A. Jengo

Have you ever gotten annoyed because you forgot to change the printing pattern on the Epson before you booted in your word processor file, modified it and got ready to list it, necessitating saving the file, inserting the Basic cartridge, lprinting to the Epson the appropriate printing type control command(s), rebooting the Word Processor, reloading the file and finally printing it out?

Well take heart, there is a way to do it from the Word Processor. This can be accomplished by positioning the cursor in front of the first line of text, pressing the **cntrl insert** key followed by the **esc** key followed by **E A** capital E not small e) for emphasized mode of **O** (the letter) for condensed mode, followed by the **cntrl insert** key. When you then tell the Word Processor to print it will be in the new mode. Unfortunately you cannot switch to any other mode during printing, unless...

If you have the Grafrax chips you can do quite a bit more. You can now switch back and forth (turn on and off) between printing modes in the same document (or on the same line for that matter). Simply position the cursor before the text destined for the print mode, press **cntrl insert** keys, then press **esc** followed by the capital letter listed in the Grafrax instruction manual for the desired mode. In order to "turn off" this new mode just position the cursor **after** the last word (or line) you wanted printed in the new mode, press **cntrl insert**, then press the **delete back space** key. That's all there is to it.

SOUND GENERATION DURING VERTICAL BLANK INTERRUPT

James A. Jengo

You say I have a multi-tasking computer capable of doing two chores simultaneously, cleverly disguised as my mild-mannered Atari 400/800 home computer?

Well . . . kind of. Actually the Atari can make you think it is a multi-tasking computer by way of the vertical blank interrupt capability that is accessible to the user. The computer must stop what it is normally doing 60 times every second in order to output another screenful of data to the television. It's at this time that the computer also chooses to do its routine housekeeping, i.e. it decrements the hardware and software timers, checks for keyboard input, etc. While doing these chores all routine processing (i.e. your ingenious program) comes to a halt and then restarts when the chores are over; all to be repeated again in the next 1/60 th second (one jiffle).

Well, as it turns out, the computer is able to perform its housekeeping chores very quickly (i.e. not a whole lot of chores to do) and actually just sits around waiting for awhile before it turns control back to your program. This is indeed a very short time but it is wasted time!! Atari lets you use this wasted time to run a second (or third, etc.) program of your choosing.

All you need to do is to write your routine (in assembly language unfortunately), place it in memory and then somehow tell the computer both your routine is located and when to start executing your routine during the vertical blank interrupt period.

As it turns out Atari makes this pretty easy (or else I couldn't have done it)! At the beginning of vertical blank the computer looks at location \$0222 (546 decimal) to find out what address it should now jump to (i.e. the address where the computer's vertical blank service routine starts). Well I think you can imagine what I am about to tell you. All you have to do is change the address stored at \$0222 so that \$0222 contains the address of the first instruction of your superduper routine. However you must remember to end your routine by telling the computer to jump the address that was initially stored at \$0222 so that it can still do its housekeeping chores (let's not be selfish). Incidentally, the address usually stored here is \$E45F. Since it is very important to change both bytes of the address stored at \$0222 at the same time, Atari is kind enough to supply a subroutine that does this for you. You merely place the low byte of your routine's first address in the Y register, the high byte into the X register and '6' into the A register, and you execute a JSR \$E45C.

The following routine will use sound generator #3 to cycle between an upper and a lower frequency limit changing the frequency a specified number of frequency units (DLTA) every specified number of jiffies (VBCNT,VBVAL).

Line 30 shows the Basic language routine this assembly language routine emulates. However in Basic the sound will only oscillate at one repetition rate (i.e. envelope frequency). The assembly routine easily allows you to vary the envelope frequency by specifying the number of jiffies between frequency changes. One simply specifies

the above parameters when prompted by the simple Basic program, which then passes them on to the assembly routine via the USR function. The routine is pretty well commented so you should be able to follow the logic (or lack thereof) fairly easily.

For you assemblers out there (i.e. those who have assembler/editors) you may want to type in the routine as I have listed it (with or without the comments) and then use the first Basic program to call the routine. If you don't have an assembler/editor or are just too lazy to type in the code, you may use the second Basic program which automatically enters the machine language routine through the data statements.

Now that you think you know all there is to know about vertical blank interrupt stealing you should realize that you have only **stolen** a mere fraction of the computer processing

time available to you during the VBI. You have been using what's called the Immediate VBI mode. There is also a Deferred VBI mode which allows you much more time to do your thing. To use the deferred mode simply place a '7' into A register in the call to the \$E45F subroutine to change the VBI vector. So much for the advantages of Deferred mode (you can do a whole lot more), but the disadvantage is that the deferred mode is being **painted** on the screen. The problem then would be trying to do graphics manipulations during this time when the graphics are being displayed on the TV . . . you can end up seeing some very weird things on the TV. Therefore, do your graphics manipulations during the Immediate mode and the other junk during the Deferred mode.

Well, time to go. Have a good time using the VBI power of your computer.

```

10 ; VBSND.SRC Uses VBI to make an oscillating sound
20 ; by James A. Jengo
30 ; Emulates: FOR F=FREQLO TO FREQUP STEP DLTA:SOUND 3,F,10,7:NEXT F:GOTO START
40 ;
50 ; Call from Basic: USR(1536,FREQUP,FREQLO,VBCNT(# of jiffies btwn freq decs),DLTA)
60 ;
70 * = $600 place this in page 6
80 FREQUP = $6F0
90 FREQLO = $6F1
100 VBVAL = $6F2
110 VBCNT = $6F3
120 VBDLDR = $6F4
130 FREQ = $6F5
140 DLTA = $6F6
150 PLA pull & ignore # of parameters passed from Basic
160 PLA
170 PLA
180 STA FREQUP
190 STA FREQ
200 PLA
210 PLA
220 STA FREQLO
230 PLA
240 PLA
250 STA VBVAL # of passes betwn freq changes
260 STA VBCNT # of passes to go before change the frequency
270 PLA
280 PLA
290 STA DLTA
300 LDA #0
310 STA VBDLDR dir'n to chng freq (0=dec,1=inc)
320 LDA #167
330 STA $D207 sound 3's distortion/volume register
340 LDA FREQUP
350 STA $D206 sound 3's frequency register

```

```
0360 LDY #$40 lo byte of new VBI routine address
0370 LDX #$06 hi byte
0380 LDA #6 signals immediate VBI
0390 JSR $E45C calls system routine to reset VBI vector to following routine at $640 (i.e. below)
0400 RTS
0410 ;
0420 *= $640 tells program that the next instruction will start at address $640
0430 DEC VBCNT
0440 LDA $6F9 check to see if a '5' was poked into this loc'n frn Basic to stop sound
0450 CMP #5
0460 BNE NXT i.e. a '5' wasn't in that address, so go on with the sound routine
0470 LDY #$5F a '5' was there, so reset the VBI immediate vector to $E45F (the original system value).
0480 LDX #$E4
0490 LDA #6
0500 JSR $E45C reset VBI vector to its orig val, i.e. stop sound
0510 NXT LDA VBCNT
0520 BNE VBEND the counter hasn't reached 0 yet so don't change the freq; just return contrl back cmpr
0530 LDA VBVAL
0540 STA VBCNT VBCNT reached 0, so reset it to orig value (VBVAL) and go ahead and change frequency
0550 LDA VBDLDR
0560 BNE JA1 i.e. incr freq (it would have =d 0 if we were supposed to decrement freq)
0570 LDA FREQ
0580 SEC
0590 SBC DLTA subtract the delta freq
0600 STA FREQ
0610 CLC
0620 CMP FREQLO
0630 BCS JASND
0640 LDA FREQLO i.e. have reached or gone below FREQLO so set FREQ to FREQLO & change VBDLDR to increment
0650 STA FREQ
0660 INC VBDLDR reached freqlo so start inc'ng freq
0670 JMP JASND
0680 JA1 INC FREQ
0690 LDA FREQ
0700 CLC
0710 ADC DLTA
0720 STA FREQ
0730 CLC
0740 CMP FREQUP
0750 BCC JASND
0760 LDA FREQUP
0770 STA FREQ
0780 DEC VBDLDR reached freqhi so start dec'ng freq
0790 JASND LDA FREQ
0800 STA $D206
0810 VBEND JMP $E45F continue on with system's VBI routine
0820 .END
```



```
10 REM VBSND,BSC      Demos VBSND.OBJ (at 1536) for a VBI oscillating sound
15 POKE 1785,0:REM if you poke a '5' into this loc'n the VBI routine will stop the sound
20 ? "ENTER DESIRED UPPER FREQ LIMIT";:INPUT FRUP
30 ? "ENTER DESIRED LOWER FREQ LIMIT";:INPUT FRLO
40 ? "ENTER # OF JIFFIES BTWN CHANGES IN FREQ LEVELS";:INPUT JIF
45 ? "ENTER FREQ CHANGE DELTA";:INPUT DLTA
50 SOUND 0,0,0,0:REM initialize Pokey chip
60 Z=USR(1536,FRUP,FRLO,JIF,DLTA)
70 ? "ENTER '5' TO STOP SOUND";:INPUT NUM
80 POKE 1785,NUM
100 END
```

```
10 REM VBSND,DMD      Demos VBSND.OBJ (at 1536) for a VBI oscillating sound; loads VBI routine into page 6
12 REM poke in the machine language VBI sound routine into 1536-1699
14 FOR I=1536 TO 1699:READ VAL:POKE I,VAL:NEXT I
15 POKE 1785,0:REM if you poke a '5' into this loc'n the VBI routine will stop the sound
20 ? "ENTER DESIRED UPPER FREQ LIMIT";:INPUT FRUP
30 ? "ENTER DESIRED LOWER FREQ LIMIT";:INPUT FRLO
40 ? "ENTER # OF JIFFIES BTWN CHANGES IN FREQ LEVELS";:INPUT JIF
45 ? "ENTER FREQ CHANGE DELTA";:INPUT DLTA
50 SOUND 0,0,0,0:REM initialize Pokey chip
60 Z=USR(1536,FRUP,FRLO,JIF,DLTA)
70 ? "ENTER '5' TO STOP SOUND";:INPUT NUM
80 POKE 1785,NUM
100 END

250 DATA 104,104,104,141,240,6,141,245,6,104,104,141,241,6,104,104,141,242,6,141
260 DATA 243,6,104,104,141,246,6,169,0,141,244,6,169,167,141,7,210,173,240,6
270 DATA 141,6,210,160,64,162,6,169,6,32,92,228,96,0,0,0,0,0,0
280 DATA 0,0,0,0,206,243,6,173,249,6,201,5,208,9,160,95,162,228,169,6
290 DATA 32,92,228,173,243,6,208,73,173,242,6,141,243,6,173,244,6,208,28,173
300 DATA 245,6,56,237,246,6,141,245,6,24,205,241,6,176,40,173,241,6,141,245
310 DATA 6,238,244,6,76,155,6,238,245,6,173,245,6,24,109,246,6,141,245,6
320 DATA 24,205,240,6,144,9,173,240,6,141,245,6,206,244,6,173,245,6,141,6
330 DATA 210,76,95,228
```

TURN YOUR 16K ATARI 400/800 INTO A 48K COMPUTER FOR UNDER \$125.00

You can turn your Atari 400 or 800 into a 48K computer using your existing 16K memory board. A kit containing all the required parts and a detailed set of step by step instructions and diagrams necessary to convert your 16K Atari memory board into a 48K memory board is available from Neotechnic Industries Inc., Dept M, P.O. Box 277, Redondo Beach, Ca 90277. The kit cost is \$124.95. Please allow 4 weeks for delivery.

NOTE - This project should not be attempted by anyone not familiar with electronic projects.

FOR SALE

VersaWriter Drawing
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Two 16K RAM Memory Boards
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(213) 374-8778

NOTICE

Please put any newsletter material in the Newsletter box at HW Electronics. The user meetings are held once monthly at 7:00PM on the third Thursday of each month at HW Electronics 2301 Artesia Blvd. Redondo Beach, Ca. 90277 (213) 370-5556

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ANNOUNCEMENTS

The Atari Edition of the Micro Media disk magazine is published six times a year. The subscription rate is \$12.95 for a single issue and \$60.00 for all 6 issues. Some of the items in the Jan/Feb issue were: pineapple rag, designer program to draw graphic designs, tutorial on player-missile graphics, front cover dedicated to science-fiction fans, reviews, editorial, and hints and tips. The address for those who are interested is Micro Media Magazine, P.O. Box 402286, Garland, Tx 75040

**AUTOMATED SIMULATIONS
WANTS PROGRAMS**

We received a letter from Automated Simulations in which they are interested in obtaining almost any type of game-- science fiction, fantasy, adventure, arcade, educational, strategy, simulations (business, science, space, etc.), sports, and the like. The games need to be challenging, fun, original, and "wear" well, meaning they should have enough appeal, complexity, and/or sustaining power that users don't get tired of playing them. The program needs to be written in a language, such as Basic or assembly, that does not require users to purchase extra software to run it.

They pay authors royalties based on the net sales of the product in question. The size of the royalty depends upon how well developed the program and documentation are and the planned selling price for the product. [Jim Jengo called them and got a more definite answer--their top is 10% with the cash up front]. Instead of cash one can also get computer equipment. They indicated that their low royalty is compensated by increased sales due to both their extensive dealer/distributor network, and their large advertising and promotion budget. Well anyway, if you are interested direct correspondence to Susan Lee-Merrow 1988 Leghorn St., Mountain View, Ca 94043. Their telephone is (415) 964-8021.

NEW DISK SYSTEM

The Leading Edge disk system LED5-01 is being offered at an introductory price of \$950 for the month of June subject to the following discounts: 1) Members of Atari users groups receive a \$80 discount, 2) The user group the buyer belongs to receives \$20 per drive. The features of this disk system are:

1. The disk runs about 8 times faster than an Atari 810.
2. Software compatible to DOS.
3. Single/Double density.
4. 6 - slot expandability off the motherboard for peripherals (EPROM burners, serial cards, etc).

Anyone interested can contact David Small at:
 Leading Edge
 8642A Spicewood Springs Road #532
 P.O. Box 10998, Austin, Texas 78766

TIDBITS

a. Try (shift-ctrl-tab) while playing "Caverns of Mars" for a surprise.

b. Although the new APX catalog is out, some of the software will not be available for a while, as APX is going to copy-protected format.

c. The following is a fix to one of the GTIA demo programs in the June OUTPOST: Atari in Creative Computing:

51000 DATA 104,162,0,172,193,2,189,194,2,
 157,193,2,232,224,8,144,245,140,200,2,96,65,
 65,65,65,65,65

d. This is your newsletter -- Tell me what you want to see and provide me with information to print.

